

# Chapter 6

## Marketplace Solutions

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Marketplace solutions rely primarily on competitive, free-market influences. Examples of marketplace solutions to airport capacity problems include the development of new hub airports, the expanded use of existing commercial service airports, the expanded use of reliever airports, the joint civilian and military use of existing military airfields, and the conversion of former military airfields to civilian use. By their very nature, marketplace solutions involve the interests of the airlines, local government and airport authorities, and local communities. In addition, both local and national economic factors are involved. This diversity of special interests makes predicting and managing these solutions inherently difficult.

Airlines and other airport users will seek other solutions for a delay-problem airport when the delays there are no longer tolerable. But before such a decision is made, it must make operational and economic sense. Marketing surveys and feasibility studies are conducted to verify such things as the adequacy of the origin and destination market and the economic viability of an airline's investment. Airport authorities, local communities, and other interested members of the aviation industry can facilitate an airline's decision process. But, in addition to conducting their own surveys and studies, they must advertise and market within the industry not only the characteristics of their airport that make it a good choice for the airlines, but also the willingness of their local community to absorb the increased traffic.

### 6.1 New Hubs at Existing Airports

As one solution to the growth in flight delays at traditional connecting hub airports, airlines may develop new hubs at existing airports. Hub airports developed since airline deregulation have exhibited the following characteristics:

- Strong origin and destination market
  - Good geographic location
  - Expandable airport facilities
  - Multiple IFR arrival capabilities
  - Strong local economy and availability of balanced work force
  - Ability to accommodate existing/planned service
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More than two dozen potential new hub airports have been identified that are located more than 50 miles from airports with forecast delay problems and that have potential runway capacity to accommodate significantly increased airport operations. Each has the potential to permit multiple approach streams during IFR conditions. Hence, they meet the first, second, and fourth characteristics. Other airports may meet the third and fourth characteristics through appropriate capital investment. Additional analysis would be required to determine which airports have viable economies, both from the local and airline perspective, as well as local support for expansion into a hub airport.

An example of the type of analysis that may be performed to determine the potential consequences of establishing a new hub airport is given for Sacramento Metropolitan Airport (SMF). A new connecting hub at Sacramento could produce delay savings by diverting some of the growth that would otherwise occur at San Francisco International (SFO).<sup>1</sup> The following figures illustrate the potential effect on delays at San Francisco in some future period assuming no change in the role Sacramento presently plays in the system. This situation is then compared to a hypothetical one in which Sacramento has become a new connecting hub airport and handles some of the traffic growth that would have connected at San Francisco. Specifically, it assumes that 200 daily operations (100 arrivals and 100 departures) are relocated as a result of establishing a new connecting hub at Sacramento. That number of flights would be “diverted” from the future growth at San Francisco.

FAA forecasts of 1998 demand were used in the analysis. As Figure 6-1 shows, demand at San Francisco is estimated as 673 daily arrivals. This level of activity results in a cumulative level of daily flight delay of 129 hours. If, as a result of Sacramento’s potential new hub status, 100 daily arrivals (200 operations) were shifted from future growth at San Francisco to Sacramento, the forecast daily delay at San Francisco would be reduced 90 hours to 39 hours, a 70 percent delay reduction. A diversion of 50 daily arrivals (100 operations) would result in a reduction of 45 hours of forecast daily delay to 84 hours, a 35 percent reduction.

This analysis assumes an hourly arrival capacity of 35 flights per hour at San Francisco under instrument meteorological conditions (IMC). Figure 6-2 shows the relationship between capacity and delay at San Francisco for various arrival capacities. The figure indicates a proportional decrease in benefits if arrival capacity grows

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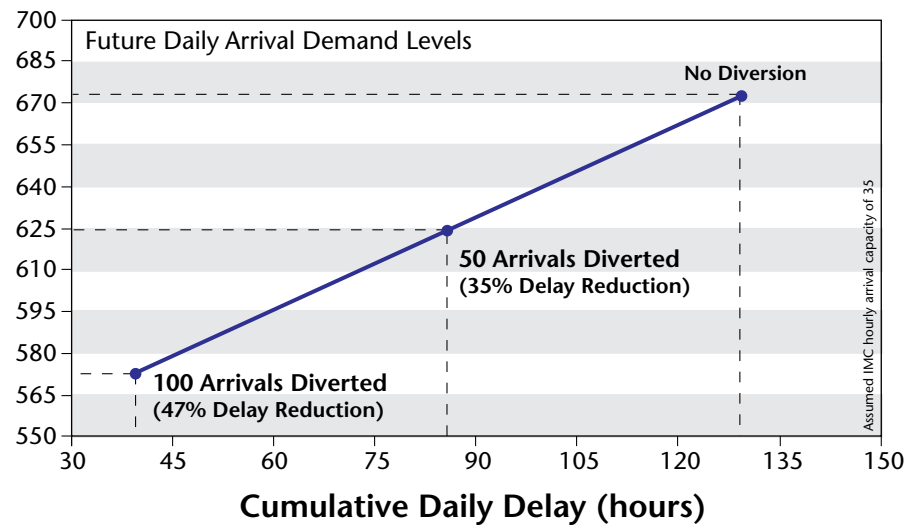
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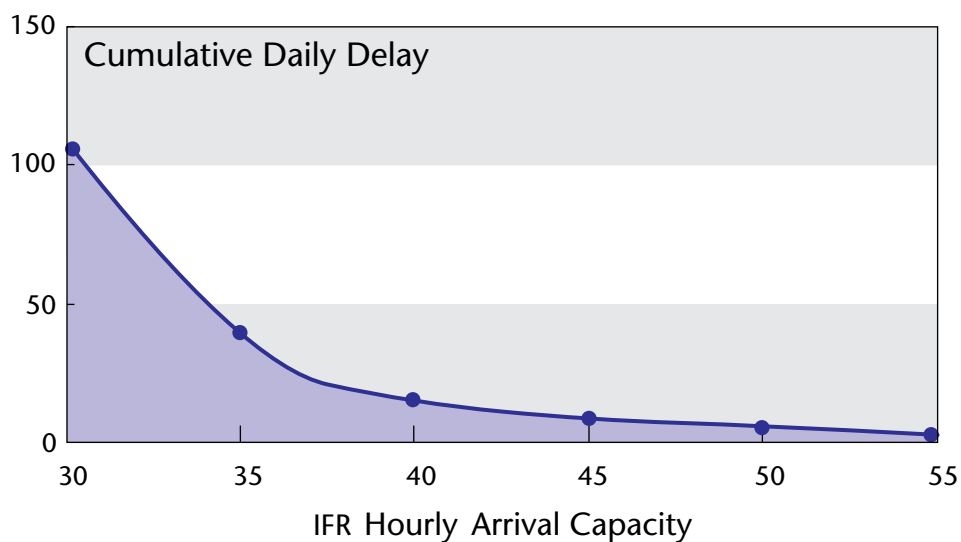
1. *A Case Study of Potential New Connecting Hub Airports, Report to Congress, March, 1991.* The other airports described in that study are Huntsville International Airport (HSV), Port Columbus International Airport (CMH), and Oklahoma City (OKC).

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(through the use of new approach procedures or new runway layouts). For example, an IMC hourly arrival rate of 40 would result in a daily delay of 15 hours, while an hourly arrival rate of 45 would result in a daily delay of 8 hours. At levels above 45 hourly arrivals, the capacity-delay curve indicates only small improvements in daily delay.



**Figure 6-1. Total Delay for Varying Arrival Demand at San Francisco**



**Figure 6-2. Capacity Delay Curve for San Francisco Assuming a New Connecting Hub at Sacramento**

## 6.2 Expanded Use of Existing Commercial Service Airports

Expanded use of existing commercial service airports can ease capacity problems at nearby primary airports by spreading commercial aircraft operations among additional airports near the primary airport.

In contrast to new hubs, the expanded use of existing commercial service airports is primarily intended to relieve congestion in a particular market, not to constitute a market of its own.

For each of the 23 current delay-problem airports, a preliminary list of airports located within 50 miles (or as close as possible) and served by commercial air traffic, was compiled. This is shown in Table 6-1. A number of military airports and airports not currently served by commercial air traffic have been added to the list. As congestion becomes greater at the delay-problem airports, passengers may choose to travel to the alternative airports. This traffic diversion would tend to decrease delays at the delay-problem airport.

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Expanded use of existing commercial service airports located within 50 miles of current delay-problem airports can ease congestion in a particular market.

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## 6.3 Expanded Use of Reliever Airports

Reliever airports ease capacity problems at primary airports by attracting general aviation aircraft away from delay-problem airports. The segregation of aircraft operations by size increases effective capacity at each airport because required time and distance separations are reduced between planes of similar size.

The FAA provides assistance for construction and improvements at reliever airports under the Airport Improvement Program. The objective of this assistance is to increase utilization of reliever airports by building new relievers, improving the facilities and navigational aids at existing relievers, and reducing the environmental impact on neighboring communities. Because they serve primarily general aviation aircraft, reliever airports can be effective with significantly less extensive facilities than commercial service airports.

Reliever airports can be expected to play significant roles in reducing congestion and delay at delay-problem airports, especially those where general aviation constitutes a significant portion of operations.

Of the 36 airports forecast to exceed 20,000 hours of annual aircraft delay in 2001 without further improvements, about one third have 25 percent or more general aviation operations.

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## 6.4 Civilian Use of Military Airfield Capacity

Although new airports or new runways and runway extensions at existing airports offer the greatest potential for increasing system capacity, a combination of community opposition, competing residential and commercial interests, environmental concerns, and cost factors have significantly constrained the development of new airports and, in some cases, the expansion of existing facilities.

As one part of its overall strategy to enhance system capacity, the FAA is pursuing a series of initiatives with the Department of Defense and state and local governments for the implementation of joint civilian and military use of existing military airfields and the conversion of former military facilities to civilian use.

The 21 joint-use facilities now in operation have had a modest impact on system capacity. For example, Charleston Air Force Base provides the primary commercial service airport for Charleston, South Carolina. Myrtle Beach Air Force Base, also in South Carolina, provides primary air service for a community that might not otherwise have local access to the commercial air system. Similarly, Dillingham Army Airfield, Hawaii, and Rickenbacker Air National Guard Base, Columbus, Ohio, provide congestion relief to the airports at Honolulu and Port Columbus, respectively.

Currently, 25 military air bases are available for conversion to civil airports. These air bases represent a federal investment of about \$25 billion in airfields and associated infrastructure. If the airfield or other portions of the base are not conveyed for public purposes, the military services propose to sell these areas and use the proceeds to assist them in the realignment and closure of other military facilities. Some of these bases have the long runways and related facilities that make them ideal locations for large commercial aircraft capable of long-stage hauls carrying large numbers of passengers and heavy cargo loads. For example, Pease Air Force Base in New Hampshire, located about 60 miles north of Boston, is being converted to civilian use. Orlando International Airport is an extremely successful example of conversion of a former military air base. It has grown from only a few passengers in the early 1970's to over 16 million passengers today. Austin, Texas, is currently considering using Bergstrom Air Force Base as a replacement for Mueller Municipal Airport. In addition, some of the smaller air bases available for conversion would be ideal as general aviation reliever airports for the nearby commercial service airports serving scheduled air carrier operations. Tipton Army Air Field near Baltimore, Maryland, and Moffett Naval Air Station in the San Francisco Bay area are being considered as general aviation relievers.

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To help support these initiatives, the Military Airport Program (MAP), established under the Airport Improvement Program (AIP), provides funding set asides from general AIP funds to implement development. The MAP allows for the designation of current or former military airfields by the Secretary of Transportation to participate in the program. Parties wishing to participate apply to the FAA. In determining whether or not to designate a facility, the FAA may consider: (1) proximity to major metropolitan air carrier airports with current or projected high levels of air carrier delay; (2) capacity of existing airspace and traffic flow patterns in the metropolitan area; (3) the availability of local sponsors for civil development; (4) existing levels of operation; (5) existing facilities; and (6) any other appropriate factors.

Seven current or former military airports have been designated thus far to participate in the MAP. These are Stewart International Airport near Newburgh, New York; Ellington Field at Houston, Texas; Albuquerque International Airport, New Mexico; Agana Naval Air Station, Guam; Manchester Municipal Airport, New Hampshire; Scott Air Force Base, in Illinois; and Myrtle Beach Air Force Base, in South Carolina. Under the MAP, these seven airports will each receive funds ranging from \$2.1 to \$5.0 million, for a total of \$27 million, to support programs to conduct master plan studies, rehabilitate runways, taxiways, and aprons, acquire land for development and approaches, improve access roads, install instrument approach aids, improve drainage, etc.

To be eligible for federal grant funds, the most important first step in setting up a joint-use facility or in converting a former or closing military air base is to establish the state or local government sponsorship for the proposed civilian airport. The joint civilian and military use of existing airfields and the conversion of former military airfields is not a panacea for aviation system capacity problems, but it is an important component in the FAA's strategy to maximize the safe utilization of the Nation's aviation system.

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**Table 6-1. A Preliminary List of Airports Located Near the 23 Delay-Problem Airports**

<b>Delay-problem Airport<sup>2</sup></b>	<b>Supplemental Airport</b>	<b>Delay-problem Airport<sup>2</sup></b>	<b>Supplemental Airport</b>
Atlanta Hartsfield	ATL Athens Macon Columbus (100 mi) Chattanooga, TN (100 mi)	Minneapolis	MSP St. Paul (Downtown) Mankato (60 mi) Rochester (77 mi) Eau Claire, WI (85 mi)
Boston	BOS Manchester Pease International Trade Port Portland, ME Providence, RI Worcester Hanscom AFB	New York	JFK Farmingdale Garden City Islip Long Island Stewart/Newburgh (60 mi) White Plains
Charlotte	CLT Hickory Greensboro (90 mi) Greer, SC (90 mi) Winston-Salem (60 mi)	Newark	EWB Trenton Stewart/Newburgh, NY (60 mi) White Plains, NY
Chicago O'Hare	ORD Aurora Chicago Midway Meigs Field Rockford Waukegan West Chicago (Du Page) Wheeling Gary, IN Glenview NAS	Orlando	MCO Daytona Beach Ft. Pierce (100 mi) Melbourne (60 mi) Tampa (70 mi) Vero Beach (90 mi)
Dallas-Ft. Worth	DFW Carswell AFB Dallas-Love Field Denton Fort Worth Meacham McKinney Mesquite Waco (80 mi)	Philadelphia	PHL Allentown Lancaster (70 mi) Reading (60 mi) Willow Grove NAS Trenton, NJ Wilmington, DE
Denver	DEN Colorado Springs (80 mi)	Phoenix	PHX Prescott (80 mi) Williams AFB
Detroit	DTW Detroit City Flint Pontiac Lansing (80 mi) Toledo, OH (60 mi) Selfridge ANG Willow Run Windsor, Ontario, Canada	Pittsburgh	PIT Johnstown Latrobe Morgantown, WV (60 mi)
Honolulu	HNL Kailua	San Francisco	SFO Concord Oakland San Jose Santa Rosa Moffett Field NAS Hamilton Field
Houston	IAH Corpus Christi Ellington Galveston Houston Hobby	St. Louis	STL Scott AFB
Los Angeles	LAX Burbank Long Beach Norton AFB Ontario Oxnard Palmdale	Seattle	SEA Everett/Paine Field McChord AFB
Miami	MIA Ft. Lauderdale	Washington National	DCA Baltimore, MD Hagerstown, MD (60 mi) Charlottesville, VA (100 mi) Richmond, VA (100 mi) Andrews AFB
		Washington Dulles	IAD Baltimore, MD Hagerstown, MD (60 mi) Charlottesville, VA (100 mi) Richmond, VA (100 mi) Andrews AFB

2. Airports having greater than 20,000 hours of delay for 1991 as reported by FAA Office of Policy and Plans.

